

01/09,01/11: Capstone Overview

The Capstone Experience

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James Mariani

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Michigan State University

Spring 2024



*From Students...
...to Professionals*

CSE498, Collaborative Design

- “The Capstone Experience”
- Professors
 - Dr. Wayne Dyksen (“Dr. D.”)
 - Prof. James Mariani
- Team Managers (TMs)
 - Samantha (Sam) Kissel
 - Griffin Klevering
 - Luke Sperling
- Class Meetings
 - Tu, Thu 3:00 – 4:20 p.m. Eastern Time
 - All-Hands:
 - 158 Natural Resources
 - Microsoft Teams General Channel
 - Split-Hands:
 - Luke: 152 Natural Resources
 - Griffin: 2250 Engineering Building
 - Sam: 158 Natural Resources
- Website
 - capstone.cse.msu.edu
 - Check it often.
- Syllabus
 - www.capstone.cse.msu.edu/other-links/syllabus
 - Read it thoroughly and carefully.
- Email
 - Check your email often.
 - Read your email immediately, thoroughly and carefully.



Meeting Goals for 01/09 and 01/11

- 01/09
 - Introduction to Capstone Logistics
 - Overview of Projects
 - Team Member Survey
- 01/11
 - Capstone Logistics
 - What's ahead?

Capstone Overview

➤ Course Logistics

- Client Projects
- Course Logistics (Continued Next Meeting)

Course Goals

[1 of 3]

- Give You Experience In
 - Real World
 - Corporate Setting
- Start Your Transition
 - From Student...
 - ...To Professional
- Start Your Transition
 - From... “Make one of these.” –CSE Professor
 - ...To “Solve my problem.” –Customer/Client



Course Goals

[2 of 3]

- Teams of 5-6 Students
- Build Significant Software System
 - Design
 - Develop
 - Debug
 - Document
 - Deliver
- For Project Sponsor / Client
(Note: We'll use “project sponsor” and “client” interchangeably.)
- In 14 (Short) Weeks



Course Goals

[3 of 3]

- Build a significant software system for a customer.
- Gather requirements.
- Work in a team environment.
- Learn new tools and environments.
- Build and administer systems.
- Develop communication skills.
- Develop interview talking points.
- Learn to do stuff on your own.
- Etc...



Professional Meeting Expectations

- Starts at 3:00 p.m. ET (Eastern Time) Promptly
- Meeting Ready
 - In Person: Seated
 - Microsoft Teams: Joined
 - Ready to Go
 - Looking Professional
- Not Meeting Ready Include But Not Limited To...
 - Entering a Room
 - Walking to a Seat
 - Being in the Process of Sitting Down
 - Joining a Meeting
- No...
 - Other Electronic Devices
 - Phones
 - Laptops
 - Etc.
 - Hats or Hoods
 - Coats
 - Eating
 - Sleeping
 - “Breaks”



Project Deliverables

- Project Plan Presentation & Document
- Alpha Presentation
- Beta Presentation
- Project Software
- Project Video
- Design Day

See [Major Milestones](#).



All-Hands/Split-Hands Meetings

- All-hands
 - Dr. D.
 - James Mariani
 - Luke Sperling
 - Guest Speaker(s)
- Split-Hands
 - Team Status Reports
 - Team Formal Presentations (30% of Final Grade)
 - Team Project Videos



Weekly Schedule

- 01/09: Capstone Overview
- 01/11: Capstone Overview
- 01/16: Risks and Prototypes
- 01/18: Project Plan
- 01/23: Team Status Report Presentations
- 01/25: Schedule and Teamwork
- 01/26: Team Photos (9:00 a.m. – 5:00 p.m.)
- 01/30: Team Project Plan Presentations
- 02/01: Team Project Plan Presentations
- 02/06: Design Day Booklet Process
- 02/08: Team Status Report Presentations
- 02/13: No Meeting
- 02/15: Creating and Giving Presentations
- 02/20: Team Alpha Presentations
- 02/22: Team Alpha Presentations
- 02/27: (Spring Break, No Meeting)
- 02/29: (Spring Break, No Meeting)
- 03/05: Team Status Report Presentations
- 03/07: Resume Writing and Interviewing
- 03/12: Design Day and the Project Videos
- 03/14: Intellectual Property
- 03/19: Ethics and Professionalism
- 03/21: Team Status Report Presentations
- 03/26: Team Status Report Presentations
- 03/28: Team Beta Presentations
- 04/02: Team Beta Presentations
- 04/04: Team Beta Presentations
- 04/09: Team Status Report Presentations
- 04/11: Team Status Report Presentations
- 04/14: Project Videos Due
- 04/16: Project Videos
- 04/17: All Deliverables Due
- 04/18: Project Videos
- 04/18: Design Day Setup
- 04/19: Design Day
- 04/25: Capstone Wrap Up (5:45 p.m. – 7:45 p.m.)



The Capstone Labs

[1 of 2]

- 3340EB, 3352EB, 3358EB
- Door Lock
 - Electronic Keypad
 - Code = #####
 - Do Not Give Out to Other Students
- Systems
 - Up to Three per Team
 - Two 27" iMacs
 - One Dell Rack-Mounted Server (Optional)
 - Team 100% Responsible
 - Building
 - Maintaining
 - Securing
 - Backing Up
- WiFi
 - SSID: CSE498, CSE498 5MHz
 - Key: ???????
- Appliances
 - Water Cooler/Heater
Nota Bene: The water cooler is not connected to a drain. Do not pour things into it, like rinsing out your water container.
 - Whirlpool Refrigerator
 - Cold Water From Bottled Water
 - Ice From Bottled Water
 - Microwave
 - Keurig Coffee Maker
- Lockable Storage
 - At Most One Drawer Per Team
 - Only As Needed
 - Assigned by Instructors
 - Obtain Keys from CSE Office



The Capstone Labs

[2 of 2]

- [3340EB](#), [3352EB](#), [3358EB](#)
- In-Person Access
 - Sanitizing Wipes
 - Keyboard and Mouse
 - Desktop
 - Before and After Use
 - Hand Sanitizer
- Remote Access
Instructions will be emailed.



Scheduled Lab Times

- No Formal Lab Sessions
- “Credit” for Scheduled Weekly Meetings
 - Team Meetings
 - Client Conference Calls
 - Triage Meetings with TMs
- Meeting Times TBA With
 - Team
 - Client
 - TMs
- Students must be available to meet in person.
 - Team Meetings
 - Triage Meetings
 - Client Conference Calls
- Schedule Accommodations
 - Made For Reasonable Requests
 - Not Made For
 - Working Unreasonable Number of Hours
 - Commuting Distance to Campus



CSE498 Prerequisites

- Must Have Successfully Completed In Advance
 - CSE300
 - CSE325
 - CSE335
 - At Least Two CSE Technical 400-Level Courses Chosen From CSE402, CSE404, CSE410, CSE415, CSE420, CSE422, CSE425, CSE431, CSE434, CSE435, CSE440, CSE450, CSE460, CSE471, CSE472, CSE476, CSE477, CSE480, and CSE482
 - Tier I Writing Requirement (WRA 101 or WRA 195H)
- Ability to Read Email
 - Immediately
 - Carefully
 - Completely



Capstone Overview

✓ Course Logistics

➤ Client Projects

• Course Logistics (Continued)



Team / Project Generalities

[1 of 3]

- Clients
 - Vary in Size and Type
 - Sponsor/client contacts are “volunteers.”
- Team Contact Person
 - Picked By Team
 - Main Point of Contact for Client



Team / Project Generalities

[2 of 3]

- Project Types
 - All Significant Software Development
 - Vary in Specifics
- Project Level of Difficulty
 - Hard Enough
 - But Not too Hard
- Deliverable
 - To the Client
 - By the Due Date



Team / Project Generalities

[3 of 3]

- Challenges
 - Very Short, Unforgiving Timeline
 - Client Contact
 - Team Dynamics
 - Project Plan (in ~3 Weeks)
 - Entirely New...
 - Languages
 - Environments
 - API's
 - SDK's
 - Processes
 - Protocols
 - Hardware
 - Etc.
 - Project Management
 - Etc...



Project Specifics

- Vary
 - Type
 - Current State of Specificity
- Challenge
 - Connect with Client
 - “Nail Down” the Project
 - Hard Enough
 - Not too Hard
 - Course Feature, Not Bug
- Must Be Approved by Instructors



Intellectual Property and Non-Disclosure Agreements

- Intellectual Property Agreement
 - You agree to assign ownership of intellectual property that may be created as a result of your project to your client.
 - Copyrightable Program Code
 - Patentable “Ideas”
 - Most clients will require an IP agreement.
- Non-Disclosure Agreement
 - You agree not to disclose client confidential information.
 - Most clients will require an NDA.
- To date...
 - Most code has not gone directly into production.
 - No patents have resulted.
- Use agreements provided by MSU to clients. See [Downloads](#).
- Contact Dr. D. or James For Questions.
- Not Willing to Sign Affects Project Choice



Project Teams

1. Ally
2. Amazon
3. Anthropocene Institute
4. Auto-Owners
5. DRIVEN-4
6. Elektrobit
7. Evolutio
8. Ford
9. GM
10. Google
11. HAP
12. Lockheed Martin Space
13. Ludus
14. Magna
15. Meijer
16. Michigan State University CSE
17. Michigan State University Enviroweather
18. MillerKnoll
19. MSUFCU
20. Roosevelt Innovations Knowledge Science
21. RPM
22. Stryker
23. TechSmith
24. Union Pacific
25. United Airlines Training
26. Urban Science
27. UWM
28. Vectra AI
29. Whirlpool
30. WK Kellogg Co



Team Ally

Project Overview

Shareholder Engagement Chatbot

- Functionalities
 - Improve Investor Engagement and Satisfaction
 - By Answer Shareholder Questions
 - With an Interactive Chatbot
- Features
 - Train an LLM on Ally's Public Filings
 - Automatically Detect Context of Question
 - Provide Appropriate Responses
 - Refuse to Disclose Private Information
 - Deploy Chatbot to be Public Facing
- Technologies
 - React
 - Amazon Web Service
 - ChatGPT / Azure Bot Service



ally

Detroit, Michigan
Charlotte, North Carolina



Team Amazon

Project Overview

Employee Badge Image Validation Tool

- Functionalities
 - Make Employee Onboarding Easy
 - By Validating ID Photos
 - Using Machine Learning Models
- Features
 - Design an Intuitive Web App
 - Train and Develop a Machine Learning Model
 - Analyze ID Photos for Quality and Errors
 - Provide Users with In-Depth Feedback on Photos
- Technologies
 - AWS Machine Learning and Image Recognition Services
 - AWS Deployments
 - AWS Compute
 - AWS Storage
 - Web Development – Angular, Vue, or React



Seattle, Washington
Detroit, Michigan

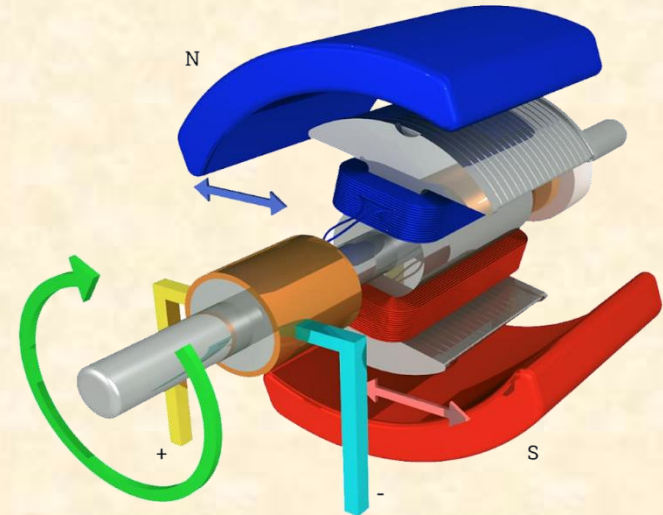


Team Anthropocene Institute

Project Overview

Optimizing Electric Motors Using Machine Learning

- Functionalities
 - Increase Electric Motor Efficiency
 - Using Machine Learning Models
 - And Real-World Datasets
- Features
 - Analyze Data From Multiple Unique Sources
 - Identify Optimal Electric Motors
 - Find Patterns in Alternative Motor Designs
 - Train a Unique AI Model That Will:
 - Maximize Motor Efficiency
 - Minimize Rare Material Usage
- Technologies
 - Modern Web Framework
 - Database Technologies
 - Machine Learning (ML)

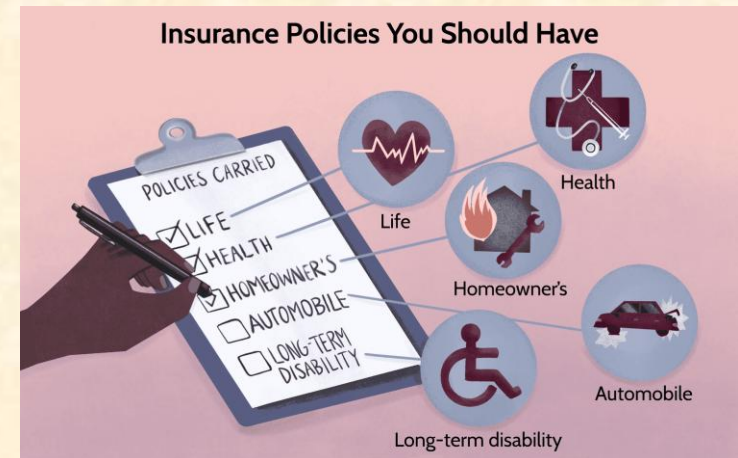


Team Auto-Owners

Project Overview

PIG: Policyholder's Interactive Guide

- Functionalities
 - Enhance Consumer Understanding of Insurance
 - By Offering a Way to View Information about Insured Items
 - Through Augmented Reality
- Features
 - AR Goggles Simulate Real-Life Scenes
 - Enable Users to Make Object Appear in Space
 - Display Information About Insurance Info in AR
 - View Insurance Information of Real-Life Vehicles
- Technologies
 - Unity
 - C++ or Equivalent
 - Visual Studio
 - Windows SDK
 - HoloLens with Developer Mode



Auto-Owners
INSURANCE

Lansing, Michigan

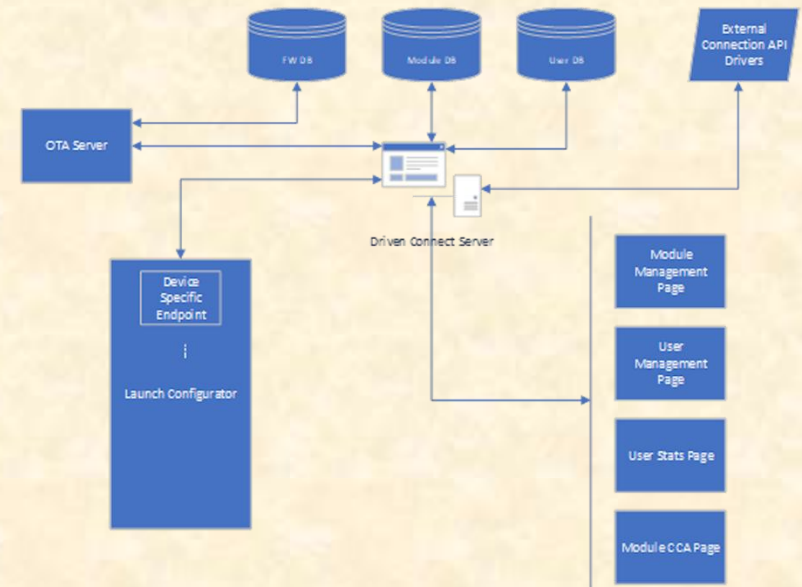


Team DRIVEN-4

Project Overview

DRIVEN-4 Connect Application, Server and Backend

- Functionalities
 - Make Data Management Easy
 - By Creating an All-In-One Data Service
 - And an Intuitive Web App
- Features
 - Develop a Configurable API System
 - Design a Custom Dashboard Creator
 - Update Existing Web App with New Capabilities
 - Integrate and Display New Data
 - Query and Modify Data
 - Integrate a User-Friendly Tutorial Page
- Technologies
 - Python
 - Pandas
 - Flask API
 - SQL



DRIVEN-4

St. Joseph, Michigan



Team Elektrobit

Project Overview

Automotive Software Integration In Virtual 3D

- Functionalities
 - Make Vehicle Testing Easier
 - By Simulating Vehicle Incidents
 - Utilizing a High-Performance Computing Module
- Features
 - Remotely Create Vehicle Simulations
 - Create Secure Connections Between Simulator and Machine
 - Start and Stop Unique Simulations
 - Simulate LiDAR and Other Vehicle Functions
 - Collect In-Depth Simulator Data for Visualizations
 - Design a Simulator Dashboard
- Technologies
 - Carla Simulator
 - EB Corbo HPC
 - Docker

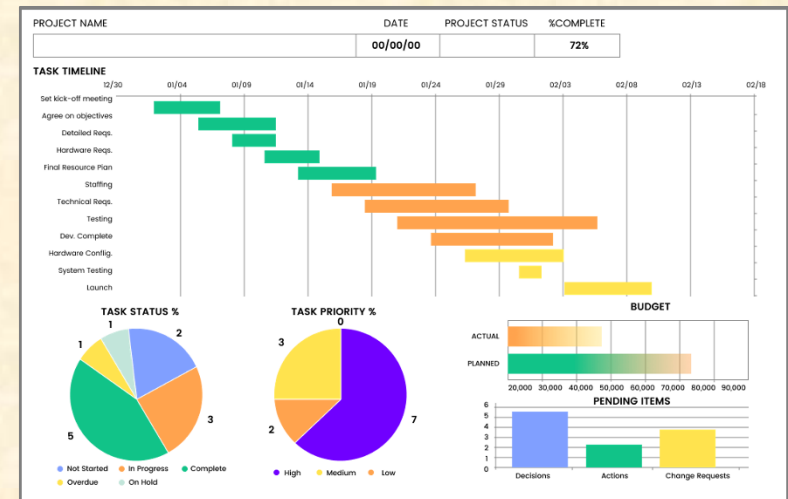


Team Evolutio

Project Overview

Evo Project Reporting Tool

- Functionalities
 - Improve Meeting Efficiency
 - By Automating Report Generation
 - Within an Intuitive Web App
- Features
 - Dynamically Generate Project Reports
 - Analyze Data From a Project Database
 - Reformat Data to Appear Attractively In A PDF Report
 - Design an Easy-To-Use Web App
 - Ensure Report Customizability for Company Styling
 - Produce Reports on a Routine Schedule
- Technologies
 - React / NextJS
 - Docker
 - Asana



Team Ford

Project Overview

Dealer Experience Dashboard

- Functionalities
 - Improve the Ford Dealership Experience
 - By Leveraging Large Amounts of Cloud Data
 - In an Intuitive Dashboard
- Features
 - Build a One-stop-shop for Dealer Interaction
 - Replace Existing COTS Dashboard
 - Develop and Maintain Completely In-house
 - Implement a New Tech Stack
 - Show Areas of Improvement for Dealers
 - Enable Easy Analysis of Customer Satisfaction
- Technologies
 - React JS
 - GCP BigQuery



Dearborn, Michigan

Team GM

Project Overview

Recovery of Lost and Stolen IT Assets

- Functionalities
 - Improve Security and Privacy of GM
 - By Assisting in the Recovery of Lost IT Assets
 - And Rendering Stolen Technology Unusable
- Features
 - Send Email Notifications After Loss
 - Notify Employees and Supervisors
 - Update Employees when Status Changes
 - Detect Lost Devices Connecting to Internet
 - Show Notification on Lost Device, Explaining its Status
 - Provide Timeline for Safe Return of Device
 - Automatically Lock Stolen Technology that is not Returned
- Technologies
 - Database Technologies
 - Microsoft Azure



Detroit, Michigan



Team Google

Project Overview

Android Vulnerability Database

- Functionalities
 - Increase Android Safety
 - By Creating a Vulnerability Database
 - Accessed Through a Web App
- Features
 - Analyze Android Vulnerability Information
 - Collect and Store Data Within a Database
 - Design an Intuitive User Interface
 - Display Data Based on User Input
 - Provide Insights on Vulnerability Patterns
- Technologies
 - Google Cloud
 - Databasing Technologies



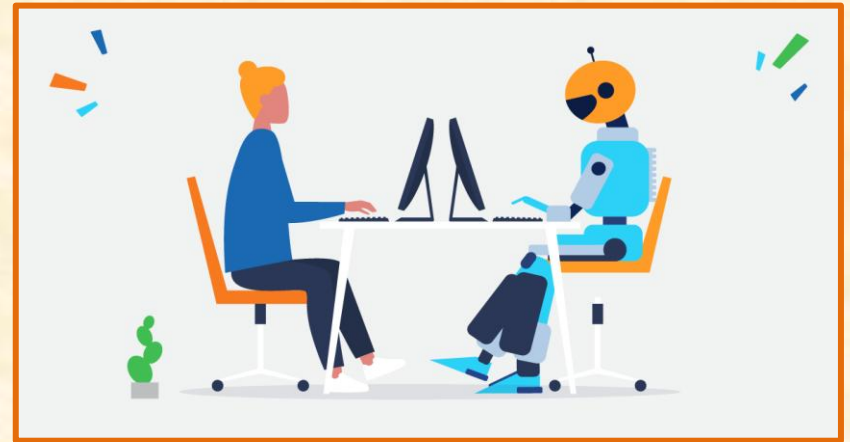
Kirkland, Washington
Mountain View, California

Team HAP

Project Overview

Artificial Intelligence (AI) Training Course

- Functionalities
 - Educate Employees on AI Capabilities
 - Through an Intensive Online Course
 - Utilizing an AI Professor
- Features
 - Design a Unique AI Training Course
 - Create an AI Professor
 - Facilitate Lessons
 - Provide Users with Q&A
 - Quiz Users on Content
 - Develop an Attractive Web App
- Technologies
 - Machine Learning Strategies – LLMs and Virtual Avatars
 - ChatGPT
 - Modern Web Framework

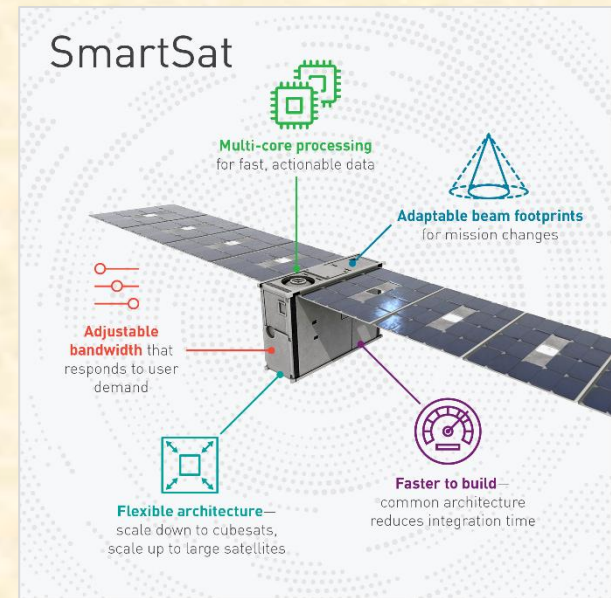


Team Lockheed Martin Space

Project Overview

SmartSat™ AI Acceleration in Space

- Functionalities
 - Enhance Satellite Capabilities
 - By Enhancing Real Satellite Software Kits
 - With Modern ML Systems
- Features
 - Analyze Modern Satellite Software
 - Develop Tools to Run on Real Satellite Hardware
 - Integrate ML Frameworks into Satellite Software
 - Design Rigorous Testing Software
- Technologies
 - C++ & Python
 - Embedded Development Exposure
 - ONNX
 - Vitis AI
 - Amd ROCm
 - Xilinx



Team Ludus

Project Overview

Digital Playbill Builder

- Functionalities
 - Offer a Unique Experience for Those Attending a Play
 - By Creating Digital Playbills
 - With an Innovative Web Application
- Features
 - Design Entire Custom Playbills or Utilize a Template
 - Add Shapes, Text, Images, Videos, Links, Buttons, and More
 - Include Interactive Features for the Audience
 - Create User Accounts to Save Projects
 - Receive Recommended Design Elements with AI
- Technologies
 - PHP with Laravel Framework
 - OpenAI API
 - HTML5 Canvas and Helper Libraries
 - Ngnix + Linux



Holland, Michigan



Team Magna

Project Overview

3D Model for Factory Digital Twin Using WebGPU

- Functionalities
 - Visualize a Manufacturing Plant
 - By Modeling Assets on a Factory Floor
 - With a Web-Based Application
- Features
 - Modify Magna's Existing Solution
 - Represent Fixed and Moveable Objects in a Factory
 - Provide Metrics About Factory Assets
 - Accurately Reflect Factory Changes in Real-Time
 - Improve Model Aesthetics and Adopt Physically-Based Rendering
- Technologies
 - RESTful APIs
 - JSON Data and Models
 - Cesium Ion Platform
 - Three.js / Babylon.js / TroisJS / TresJS
 - Orillusion / WebGPU



Tory, Michigan
Aurora, Ontario, Canada

Team Meijer

Project Overview

Supply Chain Induction Visibility Using Witron

- Functionalities
 - Create a Supply Chain Graphical View
 - Showing Incoming Inventory and Witron Induction
 - Visualized on a Real-Time Web Dashboard
- Features
 - Web Dashboards Display Several Induction Stations
 - Display Information About Velocity and Staffing
 - Facilitate Accuracy Improvements for Hundreds of Pallets
- Technologies
 - API Coding in Azure
 - Azure Web Services
 - Oracle / SQL Databases
 - Visual Web UI Platform



meijer[®]

Grand Rapids, Michigan

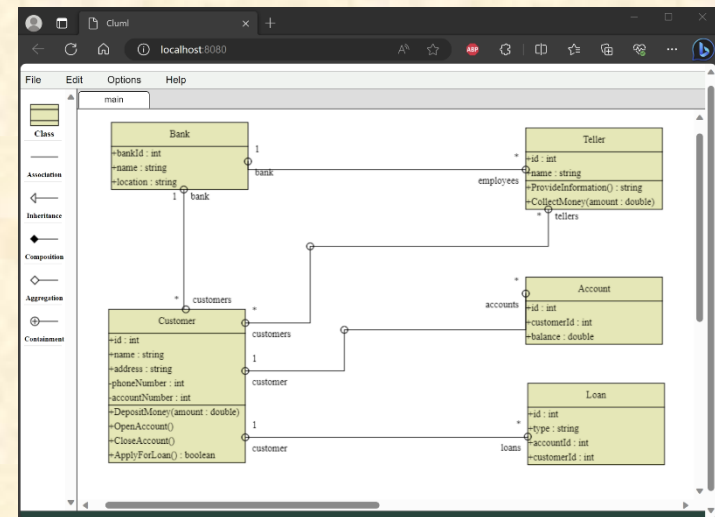


Team Michigan State University CSE

Project Overview

clUML: A Browser-based UML editor

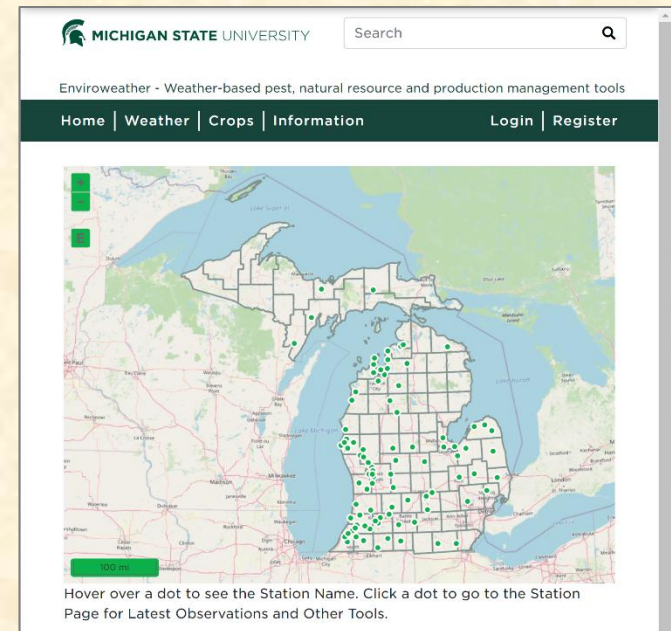
- Functionalities
 - Improve CSE Course Materials
 - By Continuing Development of UML Class Diagram Editor
 - That Will be Embedded in Any CourseLib Website
- Features
 - Creation and Editing of UML Class and Object Diagrams
 - Add Support for Tabs, Allowing Multiple Diagrams
 - Backend Support and Improvements
 - Demonstrate clUML in Several Ways Throughout CourseLib
 - Add Redundancy Checker and Other Testing
- Technologies
 - JavaScript / PHP
 - Webpack
 - Composer
 - Yarn
 - SASS
 - Karma and Jasmine



Team Michigan State University Enviroweather Project Overview

Enviroweather Mobile

- Functionalities
 - Provide Detailed Information on Weather Conditions
 - And Insect, Disease, and Crop Development
 - In a User-friendly Mobile Website
- Features
 - Offer Graphical Display of Weather Data
 - Show Regional Rainfall Summary
 - Track Pest Risk in Real-time
- Technologies
 - Swift
 - Android Studio
 - Next.js



Team MillerKnoll

Project Overview

Product Lifecycle Tracing System

- Functionalities
 - Increase Organizational Efficiency for MillerKnoll
 - With a Web Dashboard
 - That Identifies Component Sources and Products
- Features
 - Consolidate Vast Amounts of Information into a Dashboard
 - Integrate Data from Multiple Sources
 - Track Product Parts for Easy Identification
 - Via Manufacturing Location
 - Via Part Number
- Technologies
 - CSS / HTML / JavaScript / PHP
 - Data Fabric Technologies



MillerKnoll

Zeeland, Michigan



Team MSUFCU

Project Overview

Personalized Augmented Reality Experience

- Functionalities
 - Provide a Personalized Experience for Customers
 - By Offering Relevant Options when Servicing Account
 - Utilizing Facial Recognition and Augmented Reality
- Features
 - Offer a Personalized Augmented Experience to Members
 - Identify Key Reasons Member May Need Assistance
 - Allow Users to Securely Service Accounts
- Technologies
 - Scripting Languages
 - HTML / CSS
 - Android Development (Java / Kotlin)
 - iOS Development (Objective-C / Swift)
 - MySQL
 - Geofencing Technology

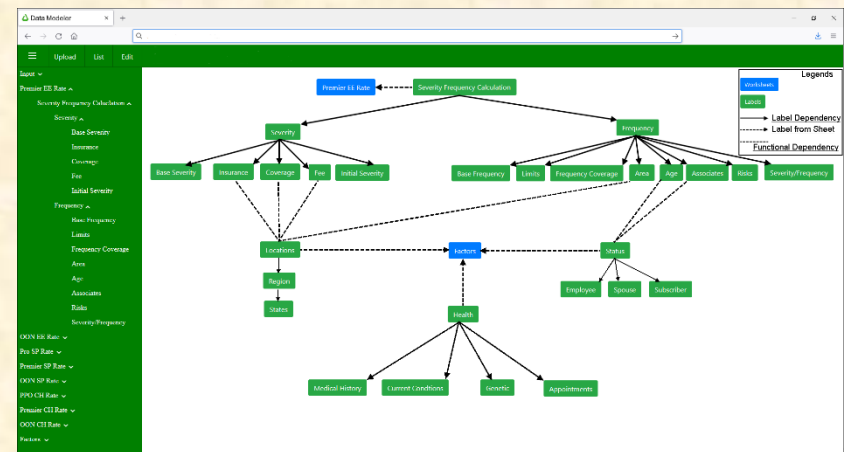


Team Roosevelt Innovations Knowledge Science

Project Overview

Microsoft Excel Data Extractor/Modeler

- Functionalities
 - Improve Efficiency and Accuracy of Operations
 - By Automatically Processing Excel Files
 - With a Novel, Robust System
- Features
 - Support Upload, Extraction, and Modeling Data
 - Reduce User Error via Automation
 - Convert Data to Domain Specific Language Code
 - Provide User-friendly Experience with UI
- Technologies
 - Angular
 - TypeScript / JavaScript
 - MongoDB
 - Microsoft Excel

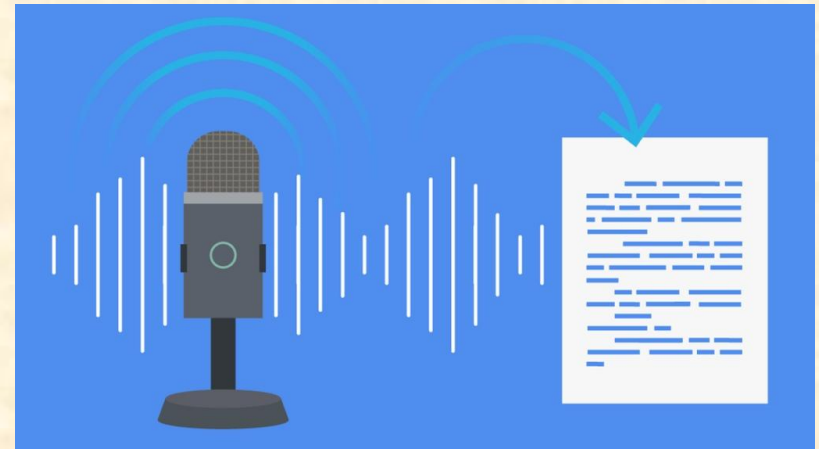


Team RPM

Project Overview

Voice Transcription API

- Functionalities
 - Provide Over-the-Phone Customer Support
 - On Customer's Personal Phones
 - In Real-time via Deep Learning
- Features
 - Answer Carrier and Customer Questions
 - Store Data in Profiling System from Conversations
 - Identify Carrier/Customer by Voice
- Technologies
 - OpenAI
 - C#
 - Twilio
 - React

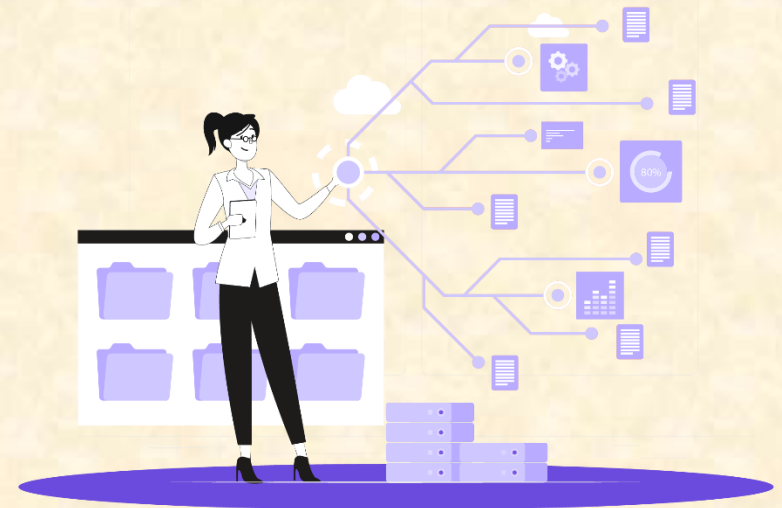


Team Stryker

Project Overview

Dynamic Visualization of Architecture Diagrams

- Functionalities
 - Easily Identify Data Integrations Between Systems
 - Through Visually Representing Data Connections
 - By Generating Diagrams on a Web-Based Tool
- Features
 - Query Databases to Find Data Connections
 - Visualize Integrations Between Systems
 - Generate System Architecture Diagrams
 - Option to Export Diagrams to Microsoft Visio for Edits
- Technologies
 - Microsoft Azure
 - Front-end UI
 - Back-end Development
 - Database Tools



stryker

Kalamazoo, Michigan

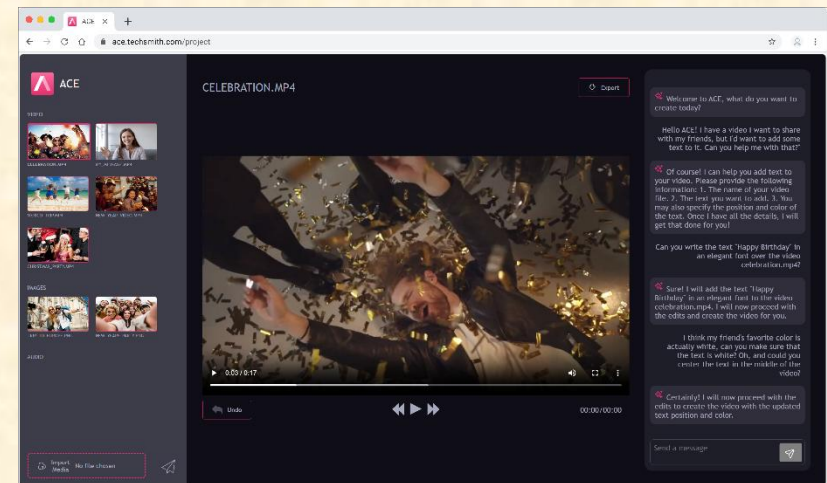


Team TechSmith

Project Overview

EVA: Enhanced Video Assistant

- Functionalities
 - Make Video Editing Seamless
 - By Trimming and Enhancing Video Content
 - Using Machine Learning Models
- Features
 - Identify the Important Parts of Videos
 - Generate Videos of the Best Segments
 - Dynamically Normalize and Enhance Audio
 - Create an AI Focus Group That Will Critique Videos
 - Design an Intuitive Web App
- Technologies
 - Angular
 - React
 - Ffmpeg
 - Microsoft Azure



Team Union Pacific

Project Overview

Rules Test Practice Tool

- Functionalities
 - To Increase Efficiency and Productivity
 - By Train Employees for Annual Exams
 - With a Website and Mobile App
- Features
 - Consolidating Training Material into One Location
 - Support Many File Types Throughout the System
 - PowerPoints
 - PDFs
 - CSVs
 - JSON Files
 - Automatically Create Practice Exams from Example Content
- Technologies
 - React
 - SCORM



BUILDING AMERICA®

Louisville, Colorado

Omaha, Nebraska



Team United Airlines Training

Project Overview

Automated Process for Airworthiness Release

- Functionalities
 - Save Time and Reduce Error in Aircraft Safety Checking
 - Streamline the Airworthiness Release Process
 - In a Multi-step Process for Technicians
- Features
 - Check for Specified Courses in Training Records
 - Automatically Send Relevant Documents to Technicians
 - Build Intuitive Progress Checker for Safety Checks
 - Incorporate Digital Signatures
 - Automate Data Validation and Storage
- Technologies
 - Microsoft Power Apps
 - Microsoft SharePoint



Team Urban Science

Project Overview

Auditing Assistant Using Video AI Platforms

- Functionalities
 - Ensure Car Dealership Compliance
 - With Standards and Guidelines Set by Car Manufacturer
 - By Analyzing Dealership Video Footage
- Features
 - Use Smartphone or Camera Footage of Dealership
 - Analyze Video Using APIs to Determine Compliance
 - Store Findings in Database
 - Display Results on Web Application
- Technologies
 - Smartphone or 360 Degree Camera
 - Client / Server Architecture
 - .NET Web APIs / .NET Maui
 - Apache Cordova
 - Ionic Framework
 - Angular
 - SQL / TypeScript



Team UWM

Project Overview

IT Datamart Microservice for BitBucket

- Functionalities
 - Gather Relevant Data from Diffused Systems
 - To Analyze Production Risks and Performance
 - By Capturing and Storing Data from Bitbucket
- Features
 - Microservice Application to Store Records
 - Maintain Historical Retention of Changes to Each Record
 - Evaluate Relevant Data of Code Repositories
 - Provide Visual Dashboard to Represent Analytics
- Technologies
 - Bitbucket
 - Jenkins
 - C#
 - SQL



Team Vectra AI

Project Overview

Hybrid Cyberattack Simulator

- Functionalities
 - Enhance Cyber Attack Simulation Software
 - To Enable Simulations of Hybrid Attacks
 - To Train AI Models that Detect Malicious Behavior
- Features
 - Enable Parameterized Input
 - Support Automated Suites of Tests
 - Create and Visualize Realistic Attack Data
- Technologies
 - Vectra C2 Simulator
 - MAAD Attack Framework
 - DeRF



VECTRA®

San Jose, California



Team Whirlpool

Project Overview

Personalizing the Culinary Experience

- Functionalities
 - Personalize Smart Appliances
 - By Suggesting Specific Recipes and Recommendations
 - Tailored to the User via Machine Learning
- Features
 - Track and Analyze User Interactions with Appliances
 - Use ML Algorithms to Identify Consumer Patterns
 - Generate Personalized User Profiles
 - Offer Customized Recipes, Cooking Methods, and More
- Technologies
 - Python
 - NoSQL and Vector Database
 - JavaScript
 - Deep Learning Framework



Whirlpool

Benton Harbor, Michigan



Attendance Today

- Get out your laptops.
- Sign into Google with MSU Credentials
- Google Form
<https://forms.gle/kaw8UUgKVc5vEP946>
- <https://shorturl.at/bckNW>



Team Member Survey

[1 of 2]

- Check Student ID
- NetID
 - Yes: dyksen
 - No: dyksen@msu.edu
- Use Upper and Lower Case
 - Yes: Lansing, Michigan
 - No: LANSING, MICHIGAN
- Hometown Country, NOT County
 - Yes: USA, China
 - No: United States, Ingham, Wayne
- Use Floating-Point Numbers Only For GPAs
 - Yes: 3.7, 2.8
 - No: 3.5-3.7, ~3.5, About 3.5



Team Member Survey

[2 of 2]

- Get out your laptops.
- Open browser.
- Log into Google with MSU credentials.
- Go to www.capstone.cse.msu.edu.
- Click on...
 - + Other Links
 - > Downloads
 - Team Member Survey: [Google Form](#)



First Assignments

- Read the [Syllabus](#).
- Check out the [Website](#).
- Check out the Lab.
([3340EB](#), [3352EB](#), [3358EB](#))
 - See if you can find it.
 - See if you can get in.
- Find the meeting slides.
capstone.cse.msu.edu/schedules/weekly-schedule



What's ahead?

[1 of 2]

- Teams
 - Receive team assignments later today. (Keep checking your email.)
 - Meet initially later today or by tomorrow morning.
 - Start researching technologies.
 - Start configuring lab machines.
 - Team assignments given in emailed project proposals.
 - Instructors will email remote access instructions.
- Project Sponsor / Client Contact
 - Contact by email ASAP and certainly by tomorrow COB. (COB == Close of Business)
 - Complete conference call or online meeting by Friday.
 - Review project proposal.



What's ahead?

[2 of 2]

- Team Photos
 - Coordinated by James
 - Friday, January 26, 9:00 a.m. – 5:00 p.m.
 - James will make a schedule.
 - On-Time Attendance Required
 - Put on your calendar now. ← **Note**
 - Scheduled via Google From
 - Email From James
 - Look for it.
 - Respond to it as a team ASAP.

Questions?



Capstone Overview

✓ Course Logistics

✓ Client Projects

➤ **Course Logistics (Continued)**



Where are we?

- Teams/Projects
 - Assigned
 - Met and Working
- Sponsors/Clients
 - Contacted
 - Scheduled Weekly Meeting
 - Met With Once?
- Luke, Griffin and Sam
 - Heard From
 - Scheduled Weekly Triage Meeting
 - Met With Once?
- Capstone Lab
 - Found It
 - Successfully Logged into Systems
 - Began Configuring Systems
- Projects
 - Studying Project Description
 - Exploring and Configuring Technologies
 - Exploring and Configuring Systems
 - Discussed with Client



About Us

[1 of 2]

- Dr. D.

- Title: Professor of Computer Science and Engineering
- Hometown: North Haledon, New Jersey



- Education: Calvin College (BS), Purdue University (MS, PhD)
- Experience: Professor @ Calvin, Purdue, Nebraska, MSU

- James Mariani

- Title: Professor of Instruction
- Hometown: Sterling Heights, Michigan
- Education: MSU (BS, MS, PhD Candidate)
- Experience: CSE498 Grad, Teaching Assistant, Professor @ MSU



About Us

[2 of 2]

- Luke Sperling
 - Title: Graduate Teaching Assistant
 - Hometown: Birmingham, Michigan
 - Education: MSU (BS, MS, PhD Candidate)
 - Experience: CSE498 Grad, Teaching Assistant @ MSU
- Griffin Klevering
 - Title: Graduate Teaching Assistant
 - Hometown: South Lyon, Michigan
 - Education: MSU (BS, MS, PhD Candidate)
 - Experience: CSE498 Grad, Teaching Assistant @ MSU
- Samantha (Sam) Kissel
 - Title: Graduate Teaching Assistant
 - Hometown: Clarkston, Michigan
 - Education: MSU (BS, MS Candidate)
 - Experience: CSE498 Grad, Teaching Assistant @ MSU



Capstone TM Nomenclature

In the spirit of running like a business...

- ~~Teaching Assistant or TA~~
- Team Manager or TM
 - Not Traditional TA Role
 - Not a Tutor
 - Luke, Griffin, Sam == TM
- Dr. D. and James
 - TMs' Managers
 - Your...
 - Manager's Managers
 - "Skip-Level" Managers



Capstone Lab Machines

- Depends on Team Needs
 - Two 27" iMacs
 - Dell Rack-Mounted Server (Optional)
 - Connected to Outside World
 - Keep Secure
 - PC (Optional)
- Operating Systems on iMacs
 - Run Latest macOS
 - Install VMware Fusion 13 (It's free.)
 - Create Virtual Machines
 - Windows 11 VM from Instructors
 - Allocate Sufficient Cores and Memory
 - Others as Needed
 - Do not use Apple Boot Camp



The Capstone Labs

[1 of 2]

- [3340EB](#), [3352EB](#), [3358EB](#)
- Security
 - Keep lab doors closed.
 - Do not open doors for strangers.
 - Do not give out the door key code to others.
 - Do not invite non-capstone students to work in the lab with you.
- Wireless
 - SSID: CSE498
 - Key: ???????
 - Intended for Devices Requiring Lab Subnet
- Coffee
 - Some Provided by Us
 - BYOKC
- Game Playing / Video Watching
 - Not On Monitors Facing Hallway
 - Not If Other Team Members Need Machine



The Capstone Labs

[2 of 2]

- Do not “maniac” the wires and cables.
- Keep the lab neat and clean.
 - Lived In, Okay.
 - Messy, Not Okay.
- Respect...
 - ...other teams’ spaces.
 - ...shared spaces.
- Garbage Containers
 - Empty the small one by the coffee maker into a larger one.
 - Put larger ones out in the hall at night if near full.
 - Put back in the lab in the morning if empty.
- Turn the lights out if you’re the last one out.
- Be careful with cabinet drawers; don’t “maniac” them.
- Water Dispensers (Cooler and Fridge) are not connected to a drain.



Devices From MSU

- For Capstone Project Use Only
- By Team for the Semester
- Includes “General Purpose” Devices

- iOS

- iPads
- iPhones

If you need something, ask.

- Android

- Tablet
- Phone

We'll figure out how to get it to you.

- Surface Pro

- Oculus Rift

For starters, use emulators.

- Something Else

- How do you get them?

- Ask TM

- Pick Them Up from TM



Devices From Project Sponsors

- Special Purpose Devices
 - Microsoft HoloLens
 - iOS or Android Device
 - NVIDIA Jetson
 - Drone
 - Raspberry Pi
 - Etc...
- How do we/you get the devices?
 - Ask sponsor to ship to Dr. D. at MSU
 - Pickup from Dr. D. and/or TMs
- Where do we keep the devices?
 - In Capstone Lab
 - Locked Cabinet
- How do we return the devices?
 - Return to Dr. D. and/or Instructors
 - Ship via UPS, USPS,...



Software

- From MSU
 - macOS
 - Window 11
 - Office 365
 - Git
- From Sponsor
 - Special Software
 - Cloud Computing



Expectations & Workload

- Extremely High For Both
- Your MSU Career Capstone
- Addition to Your Personal Portfolio
- Experience Viewed Like an Internship
- Interview Talking Points
- Leverage Into a Job Offer



Schedules

- Schedules > Weekly Schedule

- Schedules > Major Milestones

- 01/23: Status Report Presentations

- 02/01: Project Plan Presentations

- 02/20: Alpha Presentations

- 03/28: Beta Presentations

- 04/14: Project Videos

- 04/17: All Deliverables

- 04/19: Design Day

- 04/25: Capstone Wrap Up

(5:45 p.m. – 7:45 p.m.)

- Attendance is required.
- No excuses are accepted.
- Do not schedule anything during these times including interviews, travel home, etc.
- Will coordinate with your interviews.
- **Do NOT buy plane tickets to go home.**
- Read the syllabus.



Team Organization

- Up to Each Team
- Organize into Roles
 - Sponsor/Client Contact
 - Program Manager
 - Developer Roles
 - Web
 - Mobile
 - Back End
 - Front End
 - Etc.
 - Tester
 - Systems Administrator
 - Etc...
- Everyone must make significant technical contributions, including significant software contributions. ← **Fair Warning**



Team Dynamics

- Key to Success
- Significant Component of Course Grade
- Potential Teammate Problems
 - Not Attending Team Meetings
 - Not Being Involved
 - Not Responding
 - Not Completing Tasks On Time
 - Submitting Poor Work
 - Leaving Work for Others
 - Etc...
- Address Problems Immediately
 - Within Team
 - With Dr. D., James, Luke, Griffin, Sam
- Be Ready to Discuss During Interviews



Grading

[1 of 11]

- Team (70%)
 - Project Plan Document & Presentation 10
 - Alpha Presentation 10
 - Beta Presentation 10
 - Project Video 10
 - Project Software & Documentation 30
 - Total 70
- Individual (30%)
 - Technical Contribution 10
 - Team Contribution 10
 - Team Evaluation 05
 - Meeting Attendance, Preparation & Participation 05 ← Can Be Negative
 - Total 30



Grading

[2 of 11]

- Final Grade Sum Of...
 - Individual Total
 - % of Team Total Based on Team Contribution
- Grand Total =
$$\begin{aligned} & (\text{Individual Total}) \\ & + \\ & (\text{Team Total}) * (\text{Team Contribution}) / 10.0 \end{aligned}$$
- *Nota Bene*: Your Team Contribution will have a very significant effect on your final grade.



Grading

[3 of 11]

Effect of Team Contribution					
Technical Contribution	Team Contribution	Team Evaluation	Meeting Attendance	Team Total	Grand Total
10	10	5	5	70	100
10	9	5	5	70	92
10	8	5	5	70	84
10	7	5	5	70	76
10	6	5	5	70	68
10	5	5	5	70	60
10	4	5	5	70	52
10	3	5	5	70	44
10	2	5	5	70	36
10	1	5	5	70	28
10	0	5	5	70	20

Nota Bene: Assumes Perfect Score In Every Other Category



Grading

[4 of 11]

- Every student must earn the following required minimal grades in each grading category.
- Failure to earn the required minimal grades in any of the grading categories is grounds for receiving a final grade of 0.0 for the course.
- Minimal Team Grade Requirements
 - Project Plan Document & Presentation 5.0 / 10.0
 - Alpha Presentation 5.0 / 10.0
 - Beta Presentation 5.0 / 10.0
 - Project Video 5.0 / 10.0
 - Project Software & Documentation 15.0 / 30.0
- Minimal Individual Grade Requirements
 - Technical Contribution 5.0 / 10.0
 - Team Contribution 5.0 / 10.0
 - Team Evaluation 2.5 / 05.0
 - Meeting Attendance, Preparation & Participation 0.0 / 05.0



Grading

[5 of 11]

Absence does not make your teammates' hearts grow fonder.

- Nonresponsive
 - Email
 - Slack
 - Discord
 - Microsoft Teams Messages
 - Phone
- Miss Meetings
 - All-Hands & Split-Hands
 - Triage
 - Sponsors
 - Team
- Miss Work ← **Key**
 - In Lab and/or Online with Teammates
 - During Sprints
 - Before Major Milestones
- Miss Deadlines
 - Other team members may be forced to do your work.
 - We will tell other team members they... ← **Fair Warning**
 - ...can take over the tasks assigned to you.
 - ...no longer need to assign you any tasks.

NB: Your teammates will be evaluating you weekly and at the end of the semester.



- 100% In Person Meetings
 - All-Hands & Split-Hands
 - Triage
 - Team Meetings with Sponsors
 - Team Meetings
- Accommodating Student Schedules
 - Only Reasonably
 - Not for Students
 - Working \geq 20 Hours Per Week
 - Commuting to Campus



Unacceptable Excuses for Not Contributing

- My teammates...
 - ...never asked me to do anything.
 - ...never let me do anything.
 - ...mistreated me.
- My features were...
 - ...not included in the project.
 - ...deleted by our client
- I wrote lots of code, but it wasn't included in the project.
- I work 20 hours per week at my job.
- I live 60 minutes from MSU.
- I didn't want to work on this project team.
- I did a lot of research about stuff we never used.
- I was busy interviewing.
- Etc...



Grading

[8 of 11]

- We reserve the right to make changes with sufficient notice.
- No special consideration will be given for final grades, including but not limited to
 - status in any academic program at MSU including CSE,
 - the need to be graduated this semester,
 - the ability to enroll in CSE498 next semester,
 - financial aid,
 - hours worked in a job while a student at MSU,
 - distance commuting to MSU,
 - anticipated graduation from MSU,
 - acceptance of a job in anticipation of graduation,
 - rank in the armed forces,
 - mortgage on a property,
 - rental lease on a property,
 - upcoming wedding,
 - visa status,
 - or anything else.

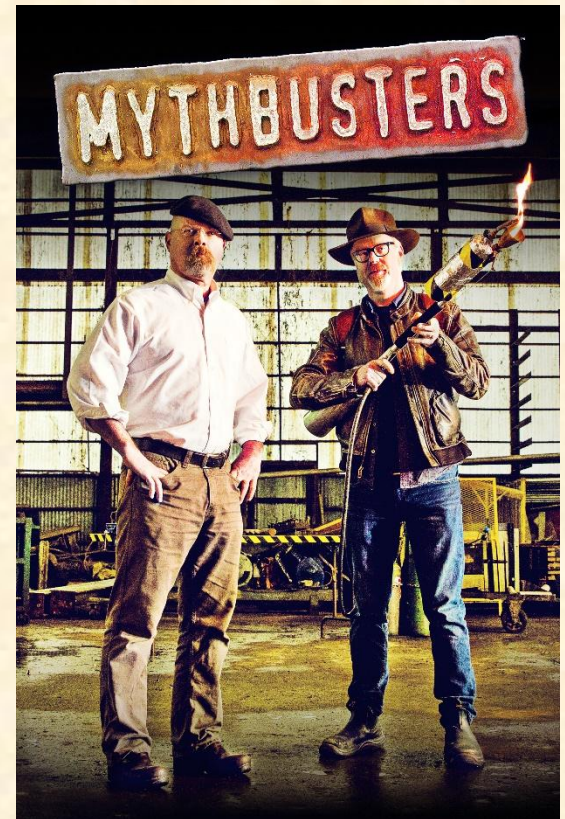


Grading

[9 of 11]

- Fall 2022 Grade Distribution

▪ 4.0	120	72.3%
▪ 3.5	19	11.5%
▪ 3.0	11	6.6%
▪ 2.5	5	3.0%
▪ 1.5	0	0.0%
▪ 1.0	1	0.6%
▪ 0.0	8	4.8%



- Do students fail capstone? Yes

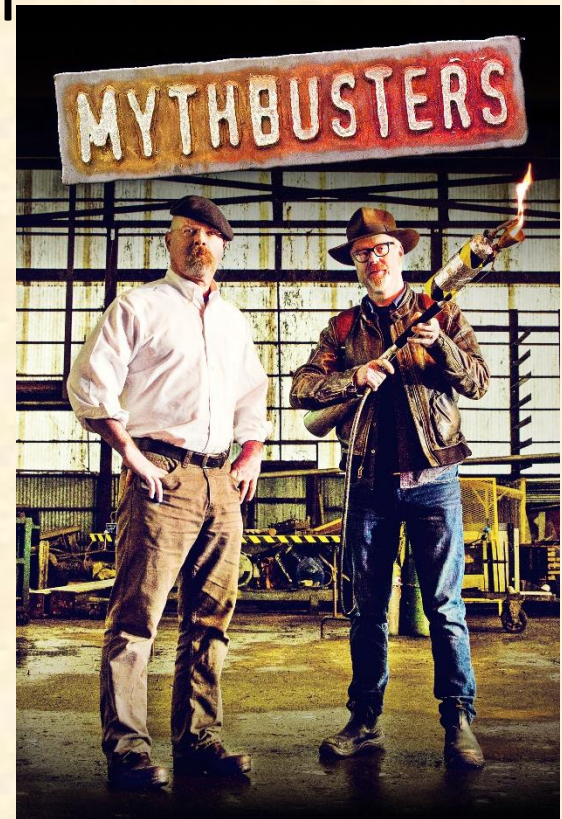
Grading

[10 of 11]

- Spring 2023 Grade Distribution

- 4.0 119 68.0%
- 3.5 15 8.6%
- 3.0 9 5.1%
- 2.5 4 2.3%
- 2.0 5 2.9%
- 1.5 4 2.3%
- 1.0 7 4.0%
- 0.0 12 6.9%

- Do students fail capstone? Yes



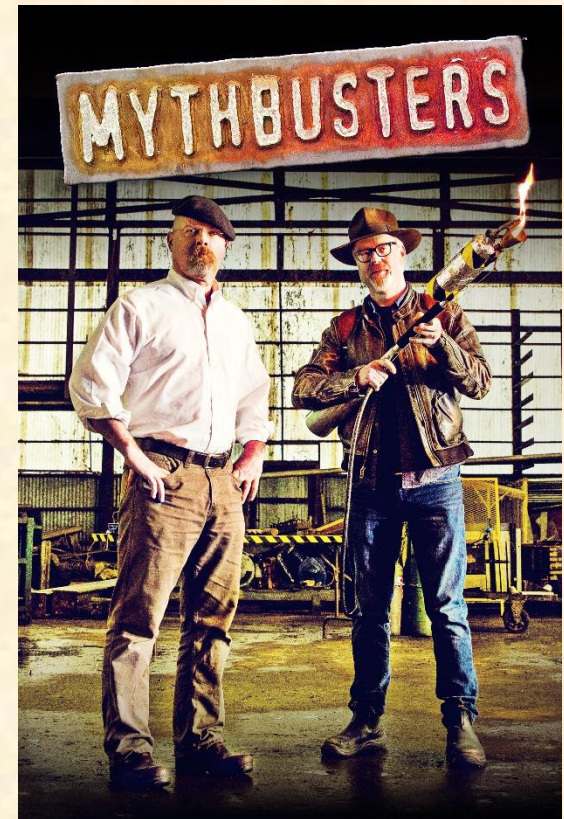
Grading

[11 of 11]

- Fall 2023 Grade Distribution

- 4.0 75 50.0%
- 3.5 27 10.0%
- 3.0 10 6.7%
- 2.5 6 4.0%
- 2.0 10 6.7%
- 1.5 3 2.0%
- 1.0 8 5.3%
- 0.0 11 7.3%

- Do students fail capstone? Yes



Meeting Attendance, Preparation & Participation (MAPP) [1 of 6]

“Meeting-Ready”

- In Person
 - Ready
 - Seated with Team in Correct Room in Assigned Seat
 - Coat and Hat Off
 - All Mobile Devices in Airplane Mode and Stowed
 - Not Ready
 - Entering the Room
 - Walking to a Seat
 - Taking off Coats and/or Stowing Devices
- Online
 - Ready
 - Joined to Microsoft Teams Meeting in Correct Channel
 - In Appropriate Location
 - Not Ready
 - Joined Using Only a Phone
 - In Inappropriate Location (Car, Bar, In Line at the RIV, etc.)



Attendance Process

- In Person
 - By TM
 - Sign a Form
- Online
 - Microsoft Teams
 - Who
 - When Joined/Left the Meeting
 - Google Forms
 - One or More at Random Time During Meeting
 - One at End of Meeting
 - 60 Seconds to Complete

**Google Form
Attendance Check**

↑↑↑↑↑↑↑↑
Only An Example



Meeting Attendance, Preparation & Participation (MAPP) [3 of 6]

MAPP Point Deductions

- All-Hands / Split-Hands
 - Meeting-Ready \leq 3:00:00 p.m.
 - Present
 - -0.0 MAPP Points
 - 3:0:01 p.m. \leq Meeting-Ready \leq 3:05:00 p.m.
 - Late
 - -0.5 MAPP Points
 - Meeting-Ready $>$ 3:05:00 p.m.
 - Absent
 - -1.0 MAPP Points
 - Leave Meeting
 - In Person: Leave the Room for Extended Period
 - Online: Miss Google Form (During or At End)
 - -1.0 MAPP Points
 - Weekly Triage Google Form and Google Slides
 - Late or Not at All
 - -0.5 MAPP Points
 - MAPP grade may become negative.



Meeting Attendance, Preparation & Participation (MAPP) [4 of 6]

- Almost No Excuses Accepted
 - One or Two Excused Possible for Interviews
 - Must Provide Information
 - Date, Company, Recruiter Name & Contact Info
 - In Advance
 - To Instructors
 - Must Attend (No Excuses Accepted)
 - Your Team Presentations
 - All Project Video Viewing
 - Design Day
 - Design Day Wrap Up
 - Read the syllabus.
 - Meeting Attendance, Preparation and Participation (MAPP) Grade
 - Meeting Attendance Policies and Procedures
- Do NOT schedule interviews.
Do NOT schedule ANYTHING.
Do NOT buy plane tickets. ←Note
- 5.0 MAPP Points Per Absence**



Meeting Attendance, Preparation & Participation (MAPP) [5 of 6]

- Excused Meeting Absences
 - Job Interviews
 - Documentation Deemed Valid
 - In Advance
 - Sickness Including COVID
 - Documentation Deemed Valid
 - ❖ Stating Not Able to Attend Due to Illness
 - ❖ By Local Medical Professional
 - ASAP
 - Read the Syllabus
 - Grief Absence
 - See MSU Policy
 - Done in Advance
 - Some MSU Events
- Cannot Accommodate Most Conflicts
- No Accommodations for Personal Reasons Other Than Above
- Cannot Be Excused from Doing Work



- Requesting Excused Absences
 - Handled by James and TM
 - Email James and TM
 - CC Dr. D.
(Dr. D. will not respond.)
- Taking or Retaking Capstone in Fall 2024
 - Due to Dropping or Failing
 - Extremely Limited Enrollment
 - First-time eligible students will get first priority.
 - You may not be able to take capstone in the fall. ← **Note**
 - Re-enroll After Dropping
 - Re-take After Failing



GitLab

- Every team must use MSU's GitLab.
 - Manage All Project Code
 - Instructors must have access.
- Access by External Project Sponsors
 - Can Accommodate
 - Contact James
- To Receive Credit for Code, Student Must
 - Commit Code
 - Using Student's GetLab Account
- Read the syllabus.



Team Contribution

- What % of Team Grade (70 Points) Does Student Deserve
- Based on Variety of Factors Including But Not Limited to...
 - Attendance and Participation
 - Team Meetings
 - Project Sponsor Meetings
 - All-Hands/Split-Hands Meetings
 - Completion of Tasks
 - Size and Number
 - Correctly
 - On Time
 - Willingness to Take on New Tasks
 - Making Significant Technical Contribution
- Read the syllabus.



Technical Contribution

[1 of 3]

- Required of Everyone
- Significant Work and Code
- Does Not Include Code...
 - Committed to GitLab by Someone Else
 - That Does Not Work
 - That Was Copied from the Internet
 - That Was Generated with ChatGPT or Any LLM.
 - Not Included in The Project
 - Not Relevant to the Project
 - For CheckInCount = 1 to 100 {Modify Code Slightly; Checked Code In Again}
 - Etc...
- Necessary, but Not Sufficient
 - Doing Research
 - Creating UI/UX Designs
 - Creating Documents
 - Giving Presentations
- Read the syllabus.



Technical Contribution

[2 of 3]

- Pair Programming
 - Writing Code Together
 - Not Watching Someone Else Write Code
 - Must Decide When Committing Who Gets Credit for What
 - Receive Credit Only for Code Checked Under Your Account
- Demonstrating and Explaining Software
 - By Author
 - Any Time
 - In-Person
 - Lab iMacs
 - Person Laptop
 - If Not Able, Assume Not Working



Technical Contribution

[3 of 3]

- Significant Effect on Team Contribution
- Project Software == 43% Team Grade
- No Significant Technical Contribution
 - No Credit for Project Software
 - Maximum of 57% of Team Grade
 - Maximum Team Contribution of 5.7/10.0
 - Most Likely Will Not Pass CSE498
- Read the syllabus.



Meeting and Work Expectations

- Meetings
 - In Person
 - Possibly Excused but Very Limited
 - If Miss Team Presentation, Must Give Presentation to Instructors
- Work
 - Entire Semester
 - Cannot Excuse Work Even if Meeting is Excused
- Example
 - Miss Week
 - Attendance
 - ❖ Excused: -0
 - ❖ Unexcused:
 - » -3+ MAPP Points == 3+% of Final Grade
 - » -10 MAPP Points == 10% of Final Grade
 - Work
 - ❖ Attendance Excused or Unexcused
 - ❖ At Least -7% of Team Contribution Grade == At Least -4.9% of Final Grade
- See syllabus.



Using Existing Code

- Ok for Learning
 - Examples
 - Prototypes
 - Open-Source Code
 - Fragments
 - Libraries
 - Utilities
- Not Ok for Project Code
 - Copy-and-Paste
 - Not Open Source
 - ChatGPT or Any Large Language Model (LLM)
- Ask instructors and client in advance.
- Document and report all existing code used.
- Be Careful!



Professionalism

- Be Professional and Respectful
 - Talking
 - Emailing
 - Texting
 - Messaging
 - Communicating in Any and All Forms
- Avoid Anything
 - Disrespectful
 - Offensive
 - Derogatory
 - Rude
 - Etc.
- All complaints must be reported even if complainant requests otherwise.



Travel to Client

- Reimburse for Mileage for Personal Car
- Travel Within Michigan (Outside of Lansing)
 - Benton Harbor
 - Battle Creek
 - Kalamazoo
 - Grand Rapids
 - Metro Detroit
- From East Lansing to Client and Back
- Cars Per Team Per Trip
 - < 6 Team Members, 1 Car
 - = 6 Team Members, 2 Cars
- See Brenda in the CSE office in advance.



VISA

- Verified Individualized Services and Accommodations
- Let us know immediately.
- We will work with you.



Integrity of Scholarship

- MSU's policies will be enforced.
- Academic dishonesty will include but not be limited to
 - committing code not written by the student to a team's main GitLab branch;
 - demonstrating code not written by the student to the instructors;
 - attempting to inflate the technical contribution by committing code not related to the project or by making multiple trivial commits or by any other means; and
 - providing false information to the professors, instructors or fellow team members about matters related to the course will be considered academic dishonesty.
- Violators...
 - ...will be reported by an Academic Dishonesty Report (AD).
 - ...will receive a grade of 0.0 in the course.



“Office” Hours

- Office
 - Any Time
 - Welcome to Call in Advance
- Email
- Microsoft Teams
 - Message
 - Meet
- Schedule an Appointment
 - In Person
 - Online via Microsoft Teams
- See Syllabus



Grade Appeal

- Students Must Demonstrate
 - Rights Violated
 - Base on Preponderance of the Evidence
- Steps to be Completed In Order
 - Meet with Instructors
 - Meet with Professor Owen
 - Request a Hearing
- If Hearing Board Finds Rights Violated
 - Case Returns to CSE
 - Grade Decided by CSE Professor(s) Appointed by Chairperson
- Nota Bene: Hearing Timing
 - Lengthy Process to Resolve
 - Two or More Months After Semester End
- Read the syllabus.



Problems

- Address Immediately
 - Respectfully
 - Within Team
 - With
 - TMs
 - James
 - Dr. D.



We don't have one of these.

Capstone Overview

✓ Course Logistics

✓ Client Projects

✓ Course Logistics (Continued)

Questions?

We're not done yet.



Team Photos

[1 of 7]

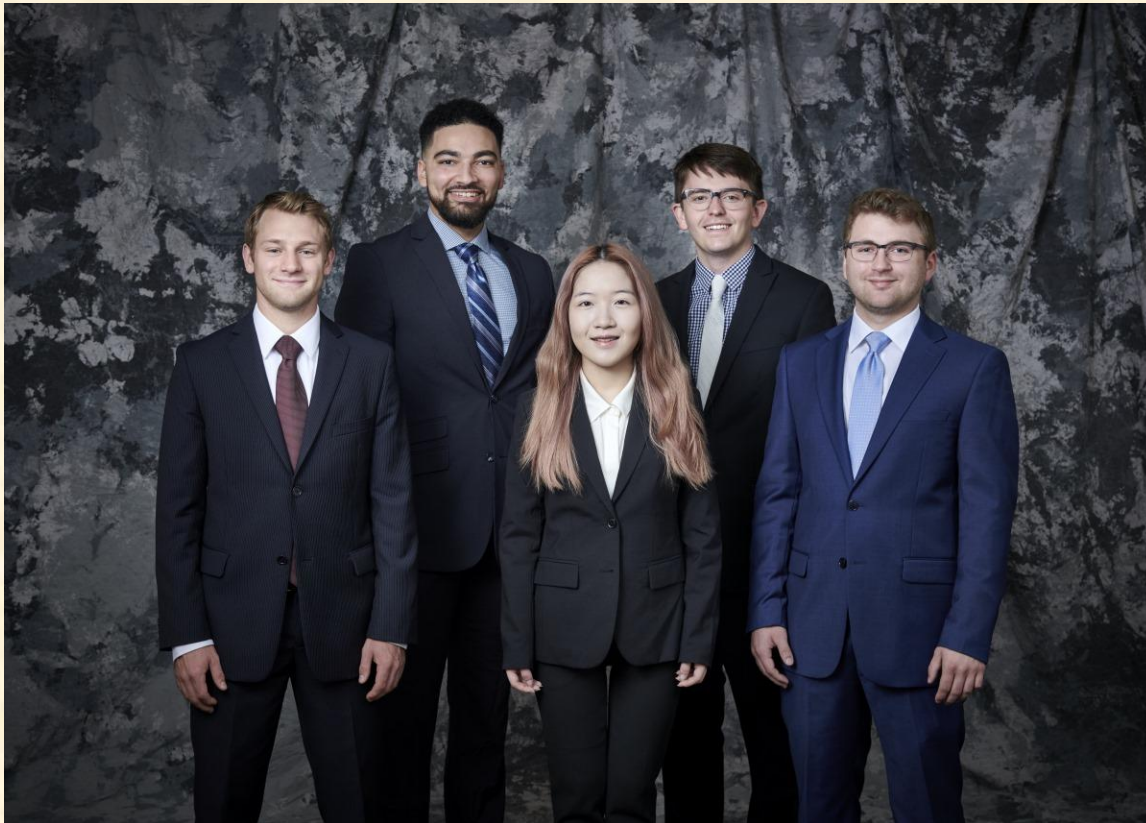
- Taken by Professional Photographer
- Used
 - On Capstone Website
 - In Design Day Booklet
 - In The Capstone Experience Booklet
- Dress
 - Business or Business Casual
 - Coordinated



Team Photos

[2 of 8]

- Team Amazon, Fall 2019





> Home

> News

+ Projects

+ Schedules

+ Design Day

+ Other Links

+ Archives

> Contact Us

Team Amazon



Detroit, Michigan
Seattle, Washington

SPARTI: Selling Partner Application Ready to Integrate

[Watch the Video...](#)

Founded in 1994 as an online bookstore, Amazon is the largest online retailer in the world. Amazon has seen tremendous growth and success, making history by becoming the second U.S. company to be valued at \$1 trillion. A key factor in Amazon's rise to the top is their e-commerce platform, which accounted for nearly 50% of all online retail purchases last year.

Today, more than half of the items sold on Amazon are managed and listed by third-party sellers. Amazon third-party sellers utilize the Amazon Seller Central portal to manually manage their listings and inventories on Amazon's platform. While the Seller Central site works well for small businesses, manual management becomes close to impossible for large and growing businesses.

Third-party sellers often create custom selling management applications. However, the process of creating these custom applications is often too difficult or overly time-consuming.

Our SPARTI application (Selling Partner Application Ready to Integrate) enables Amazon's third-party sellers to quickly and easily create custom selling management applications.

SPARTI provides users with a template application capable of fully connecting with Amazon's seller services. To deploy their custom site, a third-party seller merely needs to update the given template code with their own information.

Turnkey integration with Amazon Web Services (AWS) is also supported within SPARTI, giving third-party sellers the ability to automatically deploy and host their applications in the cloud.

Within the course of a day, a third-party seller is able to utilize the SPARTI project to build a containerized .NET application hosted on AWS ECS Fargate. The infrastructure for the application is instantiated by AWS CloudFormation.



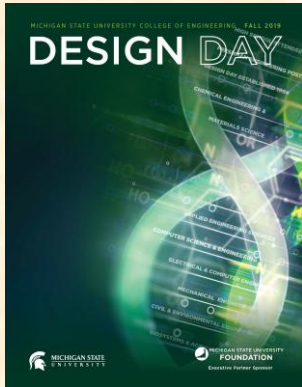
Team Amazon

SPARTI: Selling Partner Application Ready to Integrate

[Watch the Video...](#)

MSU Team Members (Left to Right)

- Tyler Rozwadowski, Waterford, Michigan
- Jordan Mulcahy, Jackson, Michigan
- Rose Wang, Shanghai, Shanghai, China
- Matt Maple, Portage, Michigan
- Noah Girard, South Lyon, Michigan



Amazon SPARTI: Selling Partner Application Ready to Integrate

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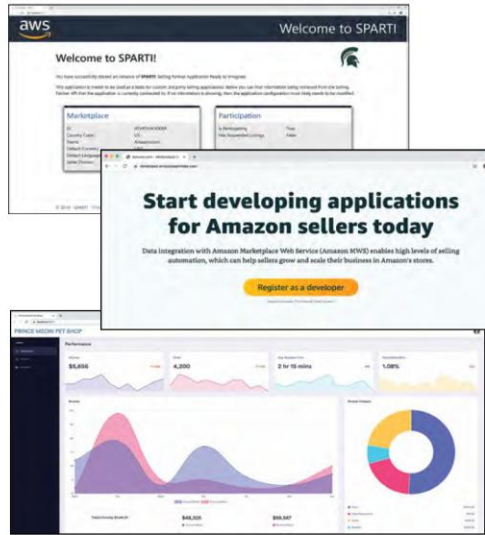
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Michigan State University Team Members (left to right)

Tyler Rozwadowski
Waterford, Michigan

Jordan Mulcahy
Jackson, Michigan

Rose Wang
Shanghai, Shanghai, China

Matt Maple
Portage, Michigan

Noah Girard
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Amazon Project Sponsors

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Sushma Gopalakrishnan
Detroit, Michigan

Madhuri Marri
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Team Photos
[4 of 8]



Amazon SPARTI: Selling Partner Application Ready to Integrate

Founded in 1994 as an online bookstore, Amazon is the largest online retailer in the world. Amazon has seen tremendous growth and success, making history by becoming the second U.S. company to be valued at \$1 trillion. A key factor in Amazon's rise to the top is their e-commerce platform, which accounted for nearly 50% of all online retail purchases last year.

Today, more than half of the items sold on Amazon are managed and listed by third-party sellers. Amazon third-party sellers utilize the Amazon Seller Central portal to manually manage their listings and inventories on Amazon's platform. While the Seller Central site works well for small businesses, manual management becomes close to impossible for large and growing businesses.

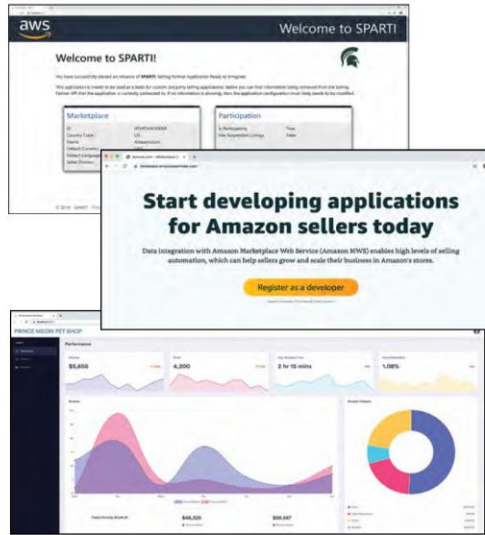
Third-party sellers often create custom selling management applications. However, the process of creating these custom applications is often too difficult or overly time-consuming.

Our SPARTI application (Selling Partner Application Ready to Integrate) enables Amazon's third-party sellers to quickly and easily create custom selling management applications.

SPARTI provides users with a template application capable of fully connecting with Amazon's seller services. To deploy their custom site, a third-party seller merely needs to update the given template code with their own information.

Turnkey integration with Amazon Web Services (AWS) is also supported within SPARTI, giving third-party sellers the ability to automatically deploy and host their applications in the cloud.

Within the course of a day, a third-party seller is able to utilize the SPARTI project to build a containerized .NET application hosted on AWS ECS Fargate. The infrastructure for the application is instantiated by AWS CloudFormation.



Michigan State University Team Members (left to right)

Tyler Rozwadowski
Waterford, Michigan

Jordan Mulcahy
Jackson, Michigan

Rose Wang
Shanghai, Shanghai, China

Matt Maple
Portage, Michigan

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Team Photos
[5 of 8]

Team Photos

[6 of 8]

- Team Amazon, Fall 2022



Team Photos

[7 of 8]

- Team Roosevelt Innovations Data Science, Fall 2022



Team Photos

[8 of 8]

- Coordinated by James
- Availability Form Due Tomorrow Night
- Friday, January 26, 9:00 a.m. – 5:00 p.m.
 - On-Time Attendance Required
 - Put on your calendar now. ← **Note**
 - Do not plan travel. ← **Note**
 - Outside of Engineering 3105 (CSE Conference Room)
- Dress
 - Business Preferred
 - At Least Business Casual
 - Team Coordinated



What's ahead?

[1 of 4]

- Upcoming Meetings

- 01/16, Tu: Risks and Prototypes
- 01/18, Th: Project Plan
- 01/23, Tu: Team Status Report Presentations
- 01/25, Th: Schedule and Teamwork
- 01/26, Fr: Team Photos (8:00 a.m. – 5:00 p.m.)
- 01/30, Tu: Team Project Plan Presentations
- 02/01, Th: Team Project Plan Presentations

} **10% of
Team Grade**



What's ahead?

[2 of 4]

- Split-Hands Meetings
 - Used On Presentation Days
 - 01/23: Team Status Report Presentations
 - 01/30, 02/01: Team Project Plan Presentations
 - Three Locations
 - Luke: 152 Natural Resource
 - Griffin: 2250 Engineering
 - Sam: 158 Natural Resources
 - Find the rooms in advance.
 - Attendance Taken As Usual Including Lateness



What's ahead?

[3 of 4]

- Website, Email and Team's Messages
 - Check Constantly
 - Read Carefully
 - Not Seeing and/or Reading Email ≠ Valid Excuse
- Triage Meetings
 - Scheduled
 - Attendance & Preparation
- 01/30, 02/01: Team Project Plan Presentations
 - Slide Deck Posted Online
 - Read and Review
 - Discuss in Triage Meetings



What's ahead?

[4 of 4]

- 01/23: Team Status Report Presentations
 - Less Than 2 Weeks From Today ←Note
 - Split-Hands Meeting
 - Slide Deck Template Posted on Downloads Page
 - Must Use Windows Version of Office 365 ←Note
 - Read Submission Instructions Carefully
 - Due by 11:59 p.m. ET, Monday, 01/22
 - Upload Two Times to Microsoft Teams
 - To General Channel File Space
Folder “Team Status Report Presentation Slide Decks”
 - To Capstone Team’s Private Channel
 - Aggregated Slide Decks by TM
 - On TM’s Laptop Used by All Teams
 - One or More Presenters Per Team
 - Random Order



Aside: Filenames

- Convention
 - Use all lowercase.
 - Delete non-numeric and non-alphabetic characters except dashes.
 - Replace blanks by dashes.
- Examples
 - Team Amazon
team-amazon-status-report-presentation.pptx
 - Team Auto-Owners
team-auto-owners-status-report-presentation.pptx
 - Team Roosevelt Innovations Knowledge Science
team-roosevelt-innovations-knowledge-science-status-report-presentation.pptx



Read Me

[1 of 2]

- Presenting

- The Status Report Presentations will be given on Tuesday, January 23.
- The purpose of your Status Report Presentation is for your team to demonstrate that you have made significant progress on your project. In particular, you will give status reports on a variety of things including the status of project sponsor contact, project sponsor meeting schedules, team meeting schedules, team organization, server systems and software, development systems and software, a brief description of the project, the status of your project plan and the initial identification of risks.
- The time limit for your presentation is 6 minutes, which will be strictly enforced. Practice your presentation to ensure that your team will finish within the allotted time of 6 minutes.
- Be ready to answer questions, including tough questions.
- We will meet in “split-hands” meetings. Luke’s teams will meet in 152 Natural Resources, Griffin’s teams will meet in 2250 Engineering, and Sam’s teams will meet in 158 Natural Resources.
- Dr. D. will combine the individual team slide decks into multiple slide decks, one for each TM.
- Your TM will project the combined slide decks using their laptop, which your team will use for your presentation.
- Your team may have one or more presenters.
- The order in which the teams will present will be random.



READ ME

[2 of 2]

- **Creating and Editing**

- Read and follow the instructions in “Editing Documents and Presentations Using Office 365” of our [course syllabus](#).
- You must use this PowerPoint slide deck template as is. Do not change the number of slides unless the instructions explicitly allow you to duplicate slides. Do not change the order of the slides. Do not change the styles. Do not edit the master slides.
- Throughout the template, replace placeholders [...] with the appropriate information.
- Edit the center footer by clicking the Header & Footer button on the Insert ribbon. Change [Team Name] in the footer to your company name as in “Team TechSmith Status Report Presentation”. If necessary, extend the width of the center footer textbox on the master slide, making sure that you re-center the enlarged textbox.
- Do not include any company confidential information in your presentation.
- Delete every textbox that includes “Delete this textbox” and every slide that includes “Delete this slide.”

- **Submitting**

- All presentations must be submitted to us and to your client by 11:59 p.m., Monday, January 22.
- Name your PowerPoint slide deck file as “team-[team-name]-status-report-presentation.pptx” replacing “[team-name]” with your team’s name normalized by using all lower case, deleting non-numeric and non-alphabetic characters, and replacing blanks by dashes. Examples include “team-kelloggs-status-report-presentation.pptx” and “team-delta-dental-knowledge-science-1-status-report-presentation.pptx” .
- Upload your PowerPoint slide deck to the folder “Status Report Presentation Slide Decks” in our Microsoft Teams General Channel file space by 11:59 p.m., Monday, January 22. In addition, upload your slide deck to your team’s private channel file space in case your slide deck is deleted by accident from the General Channel file space, and you need to prove that you did indeed upload your slide deck by the due date and time. Set File Explorer or Finder to show all file extensions to ensure that there are no blanks before the “.pptx” extension as in “team-amazon .pptx”.
- Email a copy of your slide deck to your client as well by 11:59 p.m., Monday, January 22. Do not cc us on that email. Include some professional text in the body of your email to practice being a professional and to avoid having your email sent to your project sponsor’s junk folder.



Status Report Presentation

[Project Title 36pt]

The Capstone Experience

Team [Team Name 24pt]

[Team Member 1 16pt]

[Team Member 2 16pt]

[Team Member 3 16pt]

[Team Member 4 16pt]

[Team Member 5 16pt]

[Team Member 6 16pt]

Status Information:

Think clicking "**Status**" on an Amazon order.

- You bought this on Monday, January 8. Helpful?
- We're going to send this to you. Satisfied?
- People who bought this also bought.... We good?

Where the \$*(%(\$* is my order?

Delete this textbox.



Team [Team Name]

Status Report

[1 of 4]

[Project Title]

- Sponsor Overview

- Overview Point 1
- Overview Point 2
- Overview Point 3

Describe your sponsor in 30 seconds or less.

Delete this textbox and the brace to the left.

- Project Overview

- Description Point 1
- Description Point 2
- Description Point 3
- Description Point 4

Describe your project in 30 seconds or less.

What problem does it solve?

Who will use it? How will they use it?

Delete this textbox and the brace to the left.



Team [Team Name]

Status Report

[2 of 4]

[Project Title]

- Server Systems / Software
 - Description &/or Status Point 1
 - Description &/or Status Point 2
 - Description &/or Status Point 3
- Development Systems / Software
 - Description &/or Status Point 1
 - Description &/or Status Point 2
 - Description &/or Status Point 3
- Project Plan Document
 - Status Point 1
 - Status Point 2
 - % Complete

Include status information.

Are all systems up and running?

Have you tested everything?

Delete this textbox and the brace to the left.

Include status information.

What's the status of your project plan document?

Have you started it?

How much have you written?

What percentage complete is it?

Delete this textbox and the brace to the left.



Team [Team Name]

Status Report

[3 of 4]

[Project Title]

- Client Contact

- Status Point 1
- Status Point 2

- Team Meetings

- Status Point 1
- Status Point 2

- Team Organization

- Description Point 1
- Description Point 2

Include status information.

Have you talked with/met with your client?

Have you scheduled a weekly conference call? When?

Have you scheduled an in-person meeting? When?

How many times has your team met so far?

Have you scheduled team meetings? How often?

Delete this textbox and the brace to the left.

Include status information.

Who's doing what?

Delete this textbox and the brace to the left.



Team [Team Name]

Status Report

[4 of 4]

[Project Title]

Risks

- Risk 1
 - Description
 - Mitigation
- Risk 2
 - Description
 - Mitigation
- Risk 3
 - Description
 - Mitigation
- Risk 4
 - Description
 - Mitigation

A “Risk” is a significant task that you need to accomplish that you currently do not know how to do. Usually, a risk is a “showstopper,” meaning if you cannot complete the task, you cannot complete your project.

“Mitigation” for a particular risk is your plan for eliminating that risk; that is, your plan for figuring out how to accomplish the task.

List only “real” risks. For example, learning new computer languages is **not** a risk for an MSU CSE student.

Give “useful” explanations of how you are going to mitigate each risk. For example, “we will learn how to do it” is **not** a useful explanation.

Delete this textbox.

